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THE ADOPTION OF WIKIPEDIA: A COMMUNITY- AND INFORMATION QUALITY-BASED VIEW

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Abstract

The Web 2.0 model has aroused vast attention as it alters the traditional role of Internet users as pure information receivers. Wikipedia, as one of the most successful case of the Web 2.0 model, creates an online encyclopedia through the collective efforts of volunteers. Shared freely by all Internet users, it forms an online community platform on which users can seek and share knowledge. This study investigates the factors that affect the adoption of Wikipedia. Based on the TAM of Davis (1989), perceived critical mass, community identification, and perceived information quality were incorporated into the research model to explain the intention and usage of Wikipedia. This research is a work-in-progress and a questionnaire survey will be executed, targeting at Internet users who had prior experiences with knowledge seeking on Wikipedia.

Keywords: TAM, Wikipedia, Critical Mass, Community identification, Information quality.

1 INTRODUCTION

The Internet has brought tremendous changes to the world we are in today. Revolutions of technologies and business models emerged in the past few years and also created paradigm shifts that significantly transformed the business environment and society. Among the new models that are developing, Web 2.0 is by far one of the most prominent trend (O'Reilly 2005). Unlike the old Web 1.0 model in which information was provided by Web site owners, Web 2.0 emphasizes a context in which users are free to participate and to create contents and knowledge (Musser et al. 2006). A key to the fast popularization of the Web 2.0 model is the community networks on which online communities are built. The positive and reciprocal feedbacks between the Web 2.0 model and the community networks have also encouraged the development of each other and reinforced the role "community" plays in the cyberspace (Rheingold 1993; Williams and Cothrel 2000).

Fostered by the Web 2.0 model, information sharing on the Internet has become an easy and common practice. Various applications based on this model have also been developed, among which Wikipedia is one of the most popular. Unlike the collaborative work of scholars for Britannica Online, Wikipedia is recognized as the first online encyclopedia contributed by the mass collaboration of Internet users (Wikipedia 2008a) and regarded as the result of collective intelligence of these Internet users. The success of Wikipedia also represents a shift of Internet use that community users no longer passively receive information. Rather, users create, organize, and share knowledge or information with their colleagues actively. This also contributes to Wikipedia's ranking no. 9 in popularity (Alexa 2008) and being an information source for most Internet users. In addition, the co-editing and sharing mechanism of Wikipedia not only provides a free online source of information but also creates a community which all users have trust on and are willing to enrich and promote.

On the other hand, the mass collaboration model of Wikipedia also raises concerns for the correctness and reliability of its contents. With the contents contributed and maintained by its managers and all users, a key factor affecting whether Wikipedia can be a trustworthy source of information is the quality of the contents provided. Correct and reliable information not only assists the dissemination of knowledge but also helps the diffusion of Wikipedia itself. It is therefore suggested that besides the community issues as discussed above, information quality also plays an important role in the adoption and development of Wikipedia.

The objective of this research is to investigate the factors that affect the acceptance and use of Wikipedia by Internet users. Based on the Technology Acceptance Model (Davis et al. 1989; Venkatesh and Davis 2000), this study also considers the influences of community-related factors, which include perceived critical mass and community identification, and information quality, a content-related factor, on the behavioral intention to use Wikipedia. This research is still in progress; therefore a preliminary proposal is presented in this paper.

2 LITERATURE REVIEW

2.1 Wikipedia

Wikipedia first appeared as a side project to Nupedia, a project aimed at building a free online encyclopedia providing expert-written and peer-reviewed contents (Wikipedia 2008c). Nupedia was founded in 2000 under the ownership of Bomis, Inc., whose main figures included Jimmy Wales, Bomis' CEO, and Larry Sanger, editor-in-chief for Nupedia and later Wikipedia. The free online encyclopedia being through the highly qualified contributors was to provide one that is comparable to those professional encyclopedias. As a platform for allowing collaboration on article providing prior to the reviewing process of Nupedia, Wikipedia was formally launched in January 2001 (Wikipedia 2008b; Wikipedia 2008c).

Wikipedia is distinguished from traditional encyclopedias in that it is a open platform on which volunteers around the world can make contributions freely. All articles in Wikipedia are under GNU Free Documentation License (GFDL), and Wikipedia is currently working on the switch to Creative Commons licenses. Wikipedia has been developing rapidly since its establishment. *“As of December 2007, Wikipedia had approximately 9.25 million articles in 253 languages, comprising a combined total of over 1.74 billion words for all Wikipedias. The English Wikipedia edition passed the 2,000,000 article mark on September 9, 2007, and as of February 11, 2008 it had over 2,220,000 articles consisting of over 966,000,000 words”* (Wikipedia 2008a).

As a collaborative platform, Wikipedia’s success is believed to be attributable to the strong identification of “wikipedians” as a community. As the community grows in scale, the perceived critical mass also positively contributes to the acceptance and diffusion of Wikipedia itself. Moreover, Information quality was also incorporated into the research model as it has been shown to be a key factor influencing the use of information systems.

2.2 Technology Acceptance Model

Based on the Theory of Reasoned Action (Fishbein and Ajzen 1975), the Technology Acceptance Model (TAM) has been used for explaining and predicting the adoption of IT at the individual level of analysis (Davis 1989; Davis et al. 1989). TAM differs from TRA in that subject norm of TRA was dropped in TAM, meaning that TAM does not regard subjective norm as a major factor influencing IT adoption. In addition, perceived usefulness and perceived ease of use were posited to be two beliefs influencing the attitude toward the particular technology (Davis et al. 1989).

TAM is widely used for explaining individuals’ IT adoption behavior. It applies to the Web environment as well for the Web has become a common platform of IT applications (e.g., Gefen et al. 2003; Lai and Li 2005; Cyr et al. 2006; Fu et al. 2006). For example, external variables including information quality, response time, and system accessibility were incorporated with TAM by Lin and Lu (2000) to predict the acceptance of Web sites. It was found that these factors significantly affect the perceived usefulness and perceived ease of use of Web sites. Besides, in the context of the virtual community, Lin (2007) found that perceived usefulness and ease of use are determinants of sustainability of virtual communities. Briefly, by using TAM as a basic structure for our research context, favorable system attributes of the Wikipedia website, perceived usefulness and perceived ease of use, are therefore considered as two important factors that influence users’ adoption and usage behavior of the Wikipedia.

2.3 Perceived Information Quality

Information quality is an important factor affecting the success and use of information systems (DeLone and McLean 1992; Almutairi and Subramanian 2005; Iivari 2005). The IS Success Model proposed by DeLone and McLean (1992; 2003) incorporated information quality as one of the determinants that affects the success of information systems. In the works of DeLone and McLean, information quality was measured in terms of the accuracy, timeliness, completeness, and relevance of the information provided. Information quality has also been applied to the Web environment to assess the content quality of a Web site (Ranganathan and Ganapathy 2002) and the intentions of consumers to revisit an online retailing store (Ahn et al. 2007). Besides, Lin (2007) indicated that higher perceived information quality increases the usefulness of the virtual community by enhancing the fit between web site content requirements. In other words, useful information can be ensured and provided only when the accuracy of the content is improved within the virtual community.

Wikipedia, as a platform positioned at knowledge sharing on the Web, has its core value of aggregating and disseminating knowledge through the collective works of Internet users. The quality

of information provided on this platform is therefore considered an important factor that determines the adoption and usage behavior of the users.

2.4 Community Identification

According to social identity theory, individuals tend to form self-concepts that consist of personal and social identities. The former encompasses idiosyncratic characteristics such as abilities and interests, and the latter encompasses salient group classifications (Tajfel and Turner 1979). Based on the self-concepts formed, individuals tend to classify themselves and others into various social groups based on the prototypical characteristics, enabling them to order the environment and locate themselves and others within the same group (Turner 1985).

Community identification can be conceptualized in a similar way to organizational identification, a form of social identification in which individuals identify and define themselves as a member of a particular organization through the cognitive perception of belongingness (Ashforth and Mael 1989). Higher degrees of identification motivate one to fulfill the needs and goals of the organization (or community) and display cooperative behaviors (Kramer 1993). For example, in the context of virtual communities, Hsu and Lin (2008) found that participant's intention to continue using blogs was predicated by community identification, attitude toward blogging.

Users of Wikipedia consist of those who share knowledge and those who seek knowledge. The former provide the knowledge they possess and share with other users, while the latter search for information or knowledge due to their trust on the contents provided by Wikipedia. These two types of users form the community of Wikipedia and are willing to participate because of their identification to this community.

2.5 Perceived Critical Mass

Proposed by Oliver et al. (1985), the Theory of the Critical Mass states that people tend to perform collective actions as the number of participants increases. In the IS context, however, while the actual threshold of critical mass is usually difficult to measure, participants generate the perception of whether the system has reached the threshold through interactions with other users (Markus 1990).

The importance of perceived critical mass has also been recognized by prior research in areas such as social psychology, economics, and diffusion of innovations (e.g., Lou et al. 2000; Hsu and Lu 2004; Li et al. 2005). For example, according to the Diffusion of Innovation Theory (Rogers 1995), the rate of adopting a new technology accelerates when a certain number of users, the critical mass, have already adopted the technology. The economic perspective of network externalities was applied to explaining the adoption of technologies and innovations (e.g., Nault and Dexter 1994; Wang and Seidmann 1995). In the context of Wikipedia, it is therefore believed that perceived critical mass positively accelerates the willingness of users to join and contribute to this community.

3 RESEARCH MODEL AND HYPOTHESIS

3.1 Research Model

Based on the discussion above, we argued that perceived information quality, communication identification, and perceived critical mass act as critical antecedents to the intention to use Wikipedia. These factors are incorporated with TAM as shown in Figure 1. Research hypotheses are proposed based on this model, and the development of hypotheses is presented in the next section.

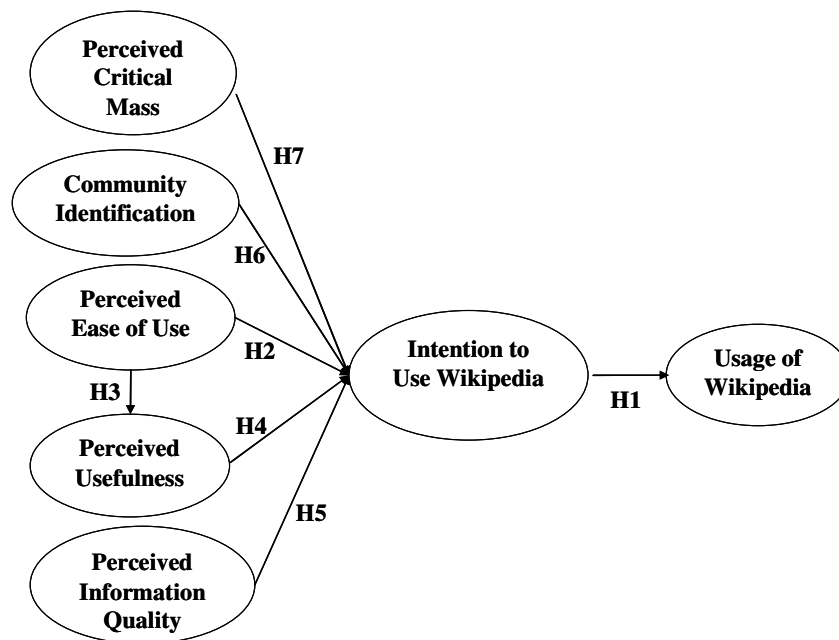


Figure 1. Research Model

3.2 Research Hypothesis

3.2.1 Technology Acceptance Model

Perceived ease of use and perceived usefulness have been shown to be important predictors of the behavioral intention to adopt a technology or a new system in TAM (Ahn et al. 2007; Chen et al. 2002; Ha et al. 2007; Im et al. 2007; Venkatesh and Davis 2000). Hypotheses 1 through 4 are therefore proposed based on prior empirical results.

H1: Behavioral intention positively influences the usage of Wikipedia.

H2: Perceived ease of use positively influences the intention to use Wikipedia.

H3: Perceived ease of use positively influences perceived usefulness of using Wikipedia.

H4: Perceived usefulness positively influences the intention to use Wikipedia.

3.2.2 Perceived Information Quality

According to the IS Success Model, information quality was posited to positively influence users' intentions to use a certain system (DeLone and McLean 1992; DeLone and McLean 2003; DeLone and McLean 2004). Moreover, as indicated by Cheong and Park (2005) and Rai et al. (2002), information quality is also related to how users interpret the content and its quality in the Web environment. In studies on virtual communities, specific online quality factors are also believed to be

critical in affecting the usage of virtual communities (Koh and Kim 2004; Lin 2007). As such, this is especially important for the use of Wikipedia because the quality of the articles, collectively contributed and edited by volunteer users, determines whether users are willing to join and to continuously devote to this community. Hypothesis 5 is therefore proposed as:

H5: Perceived information quality positively influences the intention to use Wikipedia.

3.2.3 *Community Identification*

Social identity has been found to be an important determinant of individual's behavior (Joanne et al. 2007; Scott and Blake 2007). In addition, Tidwell (2005) also pointed out that as the identity to a nonprofit organization, is strengthened, the contribution a person provides to the organization increases accordingly. As Wikipedia users seek and share knowledge on this platform, it is expected that the community identity formed during the interaction positively strengthens the intentions of users to continuously adopt Wikipedia. As the success of Wikipedia can be attributed to the collective work of all participants, the perception of belongingness further motivates the users to participate and contribute to this platform. Likewise, Hypothesis 6 is proposed as follows:

H6: Community identification positively influences the intention to use Wikipedia.

3.2.4 *Perceived Critical Mass*

The success of Wikipedia roots in the network externalities effect as discussed above. The more participants joining the community and the more qualified articles generated, the more value Wikipedia provides. A positive feedback is therefore generated that further attracts a larger group of users to join. Hsu and Lu (2004) indicated a similar effect of increased value of the community as a result of a larger group of users. Taking groupware as the target, Lou et al. (2000) found that users' intentions to use the tool increase with the perceived critical mass effect. For Wikipedia, it therefore can be expected that as more users join to contribute, share, or even just seek information on this platform, not only the content can be significantly enriched, but also more users would be attracted because it is a source where users can have their questions solved and where users can learn from. That is, users' intentions to use Wikipedia would be positively strengthened. We therefore propose H7:

H7: Perceived critical mass positively influences the intention to use Wikipedia.

4 RESEARCH METHODOLOGY

4.1 Measurements

As shown in Figure 1, seven constructs were included in the research model. The definition and operationalization of these constructs were based on relevant literature with revisions where appropriate, as described below. Respondents will be asked to report their agreement with a given statement on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree" with the midpoint anchored as "neither agree nor disagree."

Perceived Usefulness. Based on Davis et al. (1989), perceived usefulness was defined as “whether one perceives the use of Wikipedia can improve the performance of information seeking.” The measurement items were adapted from Gefen et al. (2003) for fitting the context of Wikipedia. As indicated in Table 1, there are five items for measuring this construct.

Construct	List of items	Source
Perceived Usefulness	Wikipedia is useful for knowledge searching.	Gefen et al. (2003)
	Wikipedia improves my performance in knowledge searching.	
	Wikipedia enables me to search knowledge faster.	
	Wikipedia enhances my effectiveness in knowledge searching.	
	Wikipedia makes it easier to search for knowledge.	
	Wikipedia increases my productivity in searching knowledge.	

Table 1. *Perceived Usefulness*

Perceived Ease of Use. In this research, perceived ease of use was based on Davis et al.’s (1989) definition as “the degree to which one expects the use of Wikipedia to be free of effort.” The six measurement items adapted from Davis (1989) and Venkatesh and Davis (2000) are shown in Table .

Construct	List of items	Source
Perceived Ease of Use	I find Wikipedia is easy to use.	Davis (1989) and Venkatesh and Davis (2000)
	It is easy for me to become skillful at using Wikipedia.	
	I find Wikipedia is flexible to interact with.	
	I find it easy to get Wikipedia to do what I want it to do.	
	Interacting with Wikipedia does not require a lot of my mental effort.	

Table 2. *Perceived Ease of Use*

Intention to use Wikipedia. Fishbein and Ajzen (1975) defined behavioral intention as “the person’s subjective probability that he will perform the behavior in question” (p. 12). The behavior in this research therefore refers to the act of using Wikipedia. The measurement items were adapted from Taylor and Todd (1995) as illustrated in Table 3.

Construct	List of items	Source
Intention to use Wikipedia	I intend to use Wikipedia frequently.	Taylor and Todd (1995)
	I intend to use Wikipedia to search knowledge.	
	I intend to use Wikipedia.	

Table 3. *Intention to use Wikipedia*

Perceived Information Quality. Based on Rai et al. (2002), Perceived information quality referred to “the degree to which the content, accuracy, and format of the information available from Wikipedia conforms to the requirement of the user.” In addition, the measurement items from Rai et al. (2002) were adapted, as shown in Table 4.

Construct	List of items	Source
Perceived Information Quality	The information provided in Wikipedia is helpful for my questions.	Rai et al. (2002)
	The knowledge provided in Wikipedia is sufficient for my requirement.	
	I am satisfied with the information accuracy provided by Wikipedia.	
	Wikipedia can provide the precise information that I need.	
	Wikipedia can provide the knowledge that is exactly what I need.	
	Wikipedia can provide sufficient information to enable me to finish my tasks.	

Table 4. *Perceived Information Quality*

Usage of Wikipedia. The use of Wikipedia can be seen as an instance of the usage behavior of a technology or a system (e.g., Chen et al. 2002). That is, the usage behavior in this research was measured by the frequency of using Wikipedia and the number of times Wikipedia was used over a given period of time (Chen et al. 2002), as indicated in Table 5.

Construct	List of items	Source
Usage of Wikipedia	How often do you use Wikipedia for searching related knowledge every week?	Chen et al. (2002)
	How many times have you used Wikipedia for knowledge searching in the past 6 months?	

Table 5. *Usage of Wikipedia*

Community Identification. Based on Ashforth and Mael's (1989) definition of social identity, community identity was defined as "a person's cognitive perception of oneness with or belongingness to Wikipedia." The instrument developed by Ashforth and Mael's (1989) and Hsu and Lin (2008) was adapted for use in the context of Wikipedia (in Table 6).

Construct	List of items	Source
Community Identification	Participating in Wikipedia would enhance my chance to meet members who have common interests.	Ashforth and Mael's (1989) and Hsu and Lin (2002)
	Members on Wikipedia keep close ties with each other, which is a communication channel to share social lives and information.	
	Members in Wikipedia have a strong feeling of "one group."	
	I am so proud of being a member of Wikipedia.	

Table 6. *Community Identification*

Perceived Critical Mass. Perceived critical mass referred to "the degree to which a person believes that most of his or her peers are using the system," based on Lou et al. (2000) (p. 95). The measurement items were adapted from Lou et al. (2000) and Li et al. (2005), as illustrated in Table 7.

Construct	List of items	Source
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<i>Perceived Critical Mass</i>	Many of my buddies use Wikipedia.	Lou et al. (2000) and Li et al. (2005)
	I use Wikipedia for knowledge exchange with my buddies regularly.	
	Few of my buddies use Wikipedia for exchanging new knowledge with me.	
	A large percentage of my buddies use Wikipedia.	

4.2 Research and Questionnaire Design

This research is still in progress. As described earlier, the objective of this study is to investigate the factors that affect the acceptance and use of Wikipedia by Internet users. In general, the community members on Wikipedia can be classified as knowledge sharers and knowledge seekers. A questionnaire survey will be executed, targeting at Internet users who are knowledge seekers of Wikipedia.

Meanwhile, in order to ensure that the questionnaire has proper design, a group comprising field experts and professors are being organized for the reviewing work to ensure the face and content validity. The pilot test is also being arranged. Through the pilot test, the questionnaire may need to be revised accordingly before the official distribution. In addition, the survey is expected to be conducted online in March, 2008. Furthermore, Partial Least Squares (PLS) for the investigation of measurement and structural models will be conducted by using Smart PLS 2.0 (Ringle et al. 2005) after the data collection phase is completed.

5 CONTRIBUTION OF RESEARCH

This research investigates the usage behavior of Wikipedia from the point of view of community and Perceived information quality factors. As the Internet has become an important medium fostering the formation of online communities, it is expected that this study can contribute to both the practice and the academic. The contribution of this research can be twofold. First, Wikipedia is a salient example about community-building and platform value creation which highly relies on members' interaction and knowledge provision. Since Wikipedia is a platform for knowledge sharing, the information quality and commitments between community members are also considered two critical factors for its success. Commitments between members not only create huge knowledge database but also enhance the accuracy and the numbers of knowledge contribution for Wikipedia. We hope our findings could also be explained and applied in the adoption of community websites that involve intensive knowledge sharing. Second, this research further extends the application of the traditional attitude-behavioral models such as TAM to the online environment. Although TAM has been widely applied to various research issues in both the offline and online environments, the incorporation of external factors as shown in our research model is expected to bring academic value that sheds light on the research stream on Wikipedia.

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